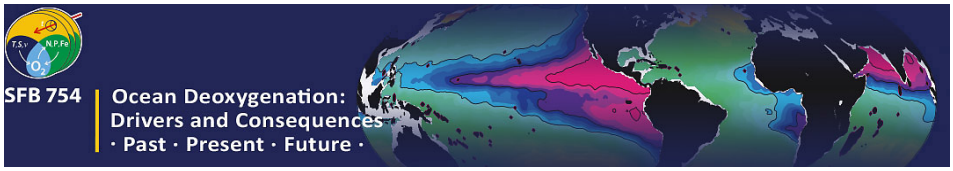

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Testing the suitability of Chilean and Peruvian margin core tops for bottom water oxygen reconstructions

In tropical and subtropical oceans, models and empirical observations indicate an expansion of the "hypoxic oceanic areas", namely Oxygen Minimum Zones (OMZ) and Anoxic Zones (AZ), under nowadays global warming conditions. Since the OMZs are located in eastern boundary upwelling areas, the Eastern Tropical and South East Pacific offer a natural laboratory to study the evolution of a OMZ and AZ. In order to reconstruct the past geometry of their respective OMZ and AZ, we aim to characterize the community structure and stable isotope composition (δ18O and δ13C) of benthic foraminifera (both Rose Bengal stained and non-stained) to generate new calibrations of geochemical (δ18O, δ13C) and biological proxies (transfer functions) to infer past environmental conditions (e.g. water density, nutrient and oxygen content) in the region. The data are complemented with measurements of seawater δ18O and δ13C.
We analysed the uppermost centimetre of multicores, gravity and piston cores (n=84) collected from the steep Peru-Chile continental margin during several expeditions along a N-S transect between 12°-42°S, spanning longitudes of 71°-80°W and water depths of 24-4000 m. The sediments are bathed by the main water masses in the region, Subantarctic Surface Water, Equatorial Subsurface Water, Antarctic Intermediate Water, Equatorial Subsurface Water, Pacific Deep Water and Circumpolar Deep Water; and are ideal for testing the suitability of Chilean and Peruvian margin core tops for bottom water oxygen reconstructions. Ages of samples are assessed using radiocarbon dating and benthic foraminiferal oxygen isotopes, only truly modern samples are considered in the calibrations.

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